

Persephone's secret

Published 13 June 2022, with Scott Reynolds Nelson.

One of the most famous rituals of the ancient Greek world was the one that took place at Eleusis, not far from Athens. We know that the ritual were initiation rites into the cult of Demeter, the goddess of agriculture and her daughter Persephone, but that is almost all we know.

We know the story of Demeter and Persephone from the homeric Hymn to Demeter, which is kind of the foundation document of the initiation rites. The rest is a mystery, the Eleusinian Mysteries, and one reason we know so little may be that the Hymn to Demeter contains a strong warning not to share the details:

The goddess Demeter taught us how to conduct her rights. She revealed her mysteries to us. Mysteries, so holy that anyone who tried to disclose them to the uninitiated would become mute and have his voice cursed by the goddess. Happy are those who have seen Demeter's mysteries during their lives, but those who have not been introduced to them will descend into the underworld without her guiding light or inner peace.

The myth of Demeter — Ceres in Latin — is usually taken as a metaphor for the annual cycle of planting and harvesting. It is that, but there may be more to it than that, a secret so valuable that it was worth protecting.

One person who thought so was Jean-Antoine Chaptal, a brilliant chemist and politician in 18th and 19th century France. He discovered that you could add sugar to grape juice to increase the alcohol content of the wine: chaptalisation. And he rediscovered Persephone's secret, as I learned from Scott Reynolds Nelson.

Scott Nelson: The story is often told as the story about just planting and harvesting, that Persephone is the child of Ceres and sprouts up and she's slim-ankled, just like the wheat plant. This is not, I think, what the story of Persephone is.

There is an ancient historian from Oxford who points out that as a farmer, the timing is wrong here. The narcissus flowers and all this

stuff are not quite right. I think, he says, it's a story about storage. And I think that that's quite right, that this is about, we need to save one-third of the harvest, or one-fifth now of the harvest, for replanting.

How do we save it? How do we keep those seeds from either germinating or collecting yeast and turning into food? The way to do that is a secret. It's a secret that's in the story of Persephone, that she died for seven days, she carries a torch, she walks around, and then she doffs her cloak. This is connected to how it is we produce food from grain. Persephone's story is a story about how she stays underground.

This secret of underground storage is an interesting one and an important one. Alexander the Great, in the period of his invasions, is horrified because all of these places have underground grain and he can't figure out where their grain is, and they can withstand sieges by his armies. By around 300 or 400, according to economists and historians, that secret is lost. In the middle ages, the way people stored grain is up in the air. We put it in a crib, expose it to wind and a little bit of heat. If we're lucky, a big chunk of that grain stays and we can plant it again.

I think the Eleusinian Mysteries, the story of Demeter and Persephone that's passed on to the Roman Empire, is a story about how to store grain. Chaptal, who is working for Napoleon, is interested in rediscovering this. He's a chemist. As Napoleon is advancing through Italy, Chaptal is coming along behind him, doing archeological expeditions around the Horae, the places where grain is stored, trying to figure out, trying to reverse engineer, the secrets of Persephone.

The way he reverse-engineers the secrets of Persephone is ... Well, he finds sand, he finds little dry bits of seed, he finds that there must have been some process by which the seed was turned over. He says, "Well, let's do this. Let's eliminate all the moisture that we can from the seed." After a couple of years of experiment, he identifies, around 1810, that if you take the seed, you stir it and you dry it and reduce it to about 5% to 10% humidity, that this grain can stay for a very, very long time.

Napoleon is very interested in this for his planned invasion of Russia, for his expansion across the west, but Chaptal's discovery comes too late. By then, Napoleon is already invading Russia. Chaptal publishes

his results in the 1820s. They hit the United States by the 1830s and 1840s. This is where we get the silo or the grain elevator. Basically, you take grain, you dry it, you stir it, you get it to about 5% to 10% humidity in the grain; and at that point, you can save it for 100 years.

That makes it possible to take grain and store it in Boston or Philadelphia or New York and send it all the way to Liverpool over a long journey, and safe. This revolutionises, the world, I think. It's crazy that it's an old technology, an ancient technology buried in the secrets of Demeter and Persephone, but one that really makes it possible for you to get your grain from 1,000 miles away.

It's impossible to underestimate how important this is. That ability to take food, store it, and deliver it a long distance is, I think, the crucial revelation that makes the 19th-century world economy possible.

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